

MPG 8730.6

REVISION A

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MARSHALL PROCEDURE AND GUIDELINES

TD01

INSPECTION OF HAZARDOUS TEST FACILITY CONFIGURATION CHANGES

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DOCUMENT HISTORY LOG

Status (Baseline/ Revision/ Canceled)	Document Revision	Effective Date	Description
Baseline		2/2/02	
Revision	A	4/28/2004	Updated header information. Updated the URL link in page footer for new location of MIDL documents. Added NPR 1441.1 to Applicable Documents section. Updated the Records section.

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PREFACE

P.1 PURPOSE

The purpose of this document is to provide inspection requirements for the verification of configuration changes to test facilities utilized to perform hazardous test activities at Marshall Space Flight Center (MSFC) as required by MWI 8715.6, "Hazardous Operations." This document addresses inspection requirements intended to verify the integrity of hazardous test facilities modifications to mitigate identified hazards unique to specific testing activities. It does not address facility safety inspections, which are intended to ensure a safe and healthy workplace.

P.2 APPLICABILITY

This procedure applies to all offices, departments, and organizations that perform hazardous test activities at MSFC.

P.3 AUTHORITY

MPD 1280.1, "Marshall Management Manual" (MMM)

P.4 APPLICABLE DOCUMENTS

- a. NPR 1441.1, "NASA Records Retention Schedules" (NRRS)
- b. MPD 1280.1, "Marshall Management Manual" (MMM)
- c. MPG 1280.2, "Process Control"
- d. MPG 1440.2, "MSFC Records Management Program"
- e. MPG 7120.1, "Program/Project Planning"
- f. MPG 8715.1, "Marshall Safety, Health, and Environmental (SHE) Program"
- g. MWI 8715.15, "MSFC Safety Assessment Program"
- h. MWI 8715.6, "Hazardous Operations"
- i. MPG 8730.3, "Control of Nonconforming Product"
- j. MWI 3410.1, "Personnel Certification Program"
- k. MWI 8715.8, "Operational Readiness Program"

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P.5 CANCELLATION

MPG 8730.6 dated February 5, 2002

Original signed by
Axel Roth for

David A. King
Director

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DOCUMENT CONTENT

1. DEFINITIONS

1.1 Continuous Monitoring. As used in this document, continuous monitoring of a particular test facility modification process element requires witnessing the specific process element from beginning to end.

1.2 Hazard Analysis/Risk Assessment. The systematic identification and evaluation of existing and potential hazards and the recommended mitigation for the hazard sources found, based on risk assessment.

1.3 Hazardous Test Activities. As used in this document, the term refers to all activities performed in providing test services that involve hazardous operations or hazardous facilities with a facility risk indicator of level 1 or level 2, as defined in MWI 8715.15, "MSFC Safety Assessment Program."

1.4 Inspection. A process performed to verify the conformance of an item or product to the specified requirement by examination and/or testing. Within the scope of this document, inspection refers to the processes performed to verify conformance of test facility systems, components and facility modifications to meet specified test requirements, applicable safety codes, standards, and quality system requirements. These inspections are performed within the test facility buildup phase of test project execution, which includes fabrication, installation, and checkout/activation of special test equipment and test facility systems.

1.5 Safety and Mission Assurance. (S&MA)

1.6 Special Test Equipment. The structure and equipment that adapt the test article to the test stand.

1.7 Test Article. The item to be tested.

1.8 Test Facility. Includes the test stand and the special test equipment plus other facilities and equipment in the immediate area that provide direct support for testing such as buildings, propellant storage facilities, wiring, control and instrumentation systems, data recording systems, electrical power systems, software, fire extinguishing systems, and other associated systems.

1.9 Testing Organization. (TO)

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1.10 Testing Services. As used in this document, the term refers to the processes used to provide test services covering all phases of test project execution from facility buildup/modification through test operation/execution. These testing services may be provided to satisfy a variety of test objectives, including basic research for proof-of-concept testing and advanced technology evaluation testing, as well as system and component verification testing.

1.11 Test Preparation Sheet (TPS). A document used to specify, authorize, control, and document test preparation work, including test facility buildup and modification.

1.12 Test Readiness Review (TRR). A pre-test briefing with test participants and MSFC management, prior to starting test operations, to review: test requirements, facility and test article configuration, facility set-ups, sequences, safety considerations, and emergency shutdown procedures. (See MWI 8715.8, "Operational Readiness Program.")

1.13 Test Stand. The permanent structure in which the test article is mounted for testing.

1.14 Verify. To review recorded data (inspection, test, etc.) for conformance to specifications, drawing requirements, etc.

1.15 Witness. To observe a fabrication, test, or operation to verify that correct procedures and processes are followed for a specific action.

1.16 Work Authorizing Document. Any document (typically specifying detailed work instructions) used to authorize and document work such as a TPS, work order, traveler, test procedure, etc.

2. RESPONSIBILITIES

2.1 The S&MA Directorate will perform the following:

2.1.1 Ensure an appropriate hazard analysis for the test facility/operation per MWI 8715.15, "MSFC Safety Assessment Program," and MWI 8715.6, "Hazardous Operations." Specify hazard mitigation techniques, such as required inspections of test facility modifications/configuration changes, operator qualification and/or continuous monitoring requirements, facility design constraints, and operational/procedural methods.

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2.1.2 Generate appropriate inspection planning documentation (or verify that contractor has appropriate inspection planning documentation) to specify facility inspection requirements, as well as operator qualification, and continuous monitoring requirements, based on the program/project plans, hazard analysis, applicable safety codes and standards, quality system requirements and typical test requirements for in-house testing performed at MSFC. This may be a generic plan or may be developed specifically for each test project.

2.1.3 Establish documented procedures (or verify that contractor has established procedures) to ensure all required inspections are performed properly (per industry standard practices and techniques) and by appropriately certified personnel in accordance with MWI 3410.1, "Personnel Certification Program." For examples, non-destructive examination procedures and weld inspection procedures would be established to ensure that those type inspections are performed properly.

2.1.4 Review and approve work authorization documentation to ensure that all appropriate inspections are performed in order to verify that test requirements are met.

2.1.5 Perform inspections (or monitor contractor performance of inspections) for facility modifications for hazardous testing, as required by applicable organizational issuances, project plans, hazard analysis, and all applicable codes and standards.

2.1.6 Review and approve (or verify contractor system for reviewing and approving) nonconformance documentation generated during facility inspection activities, per MPG 8730.3, "Control of Nonconforming Product," and applicable organizational issuances.

2.2 Testing Organizations are responsible for the following:

2.2.1 Identify and implement appropriate controls to mitigate hazards identified in hazard analysis for the test facility/operation.

2.2.2 Specify facility inspection requirements, operator qualification, and/or continuous monitoring requirements unique to the nature of test operations performed within each testing organization as per test requirements and hazard analysis, as well as all applicable safety codes, standards, and quality system requirements.

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2.2.3 Establish procedures and work authorization documentation to ensure that all appropriate inspections are performed in order to verify that test requirements are met.

2.2.4 Perform inspections of facility modifications (in coordination with S&MA or contractor quality assurance) for hazardous testing, as required by applicable organizational issuances, project plans, and all applicable codes and standards.

2.2.5 Document and resolve all nonconformances detected during facility inspections, per MPG 8730.3, "Control of Nonconforming Product," and applicable organizational issuances.

2.2.6 Perform test readiness reviews, per MWI 8715.8, "Operational Readiness Program," and applicable organizational issuances to ensure all required inspections have been performed and results documented to verify that facility modifications and interfaces to the test article meet test requirements and to ensure safety of test operations and activities.

2.2.7 Perform test activities per documented and approved procedures to ensure that all test requirements are met.

2.2.8 Maintain records of inspection procedures and the results obtained, as required by local organizational issuances.

3. PROCEDURE

<u>Actionee</u>		<u>Action</u>
S&MA, TO	3.1	Assure hazard analysis is performed.
S&MA, TO	3.2	Determine and document the facility modification processes where the resulting output cannot be verified by subsequent inspection, and thus, require qualified operators and/or continuous monitoring of process parameters to ensure specified requirements are met in accordance with MPG 1280.2, "Process Control." This determination is done per hazard analysis, quality assurance requirements, and applicable safety codes and standards.
S&MA, TO	3.3	Determine and document the inspection requirements for facility modifications as per hazard analysis, quality assurance requirements, and applicable safety codes

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and standards.

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| S&MA, TO | 3.4 | Perform required inspections and record results of facility modifications and continuous monitoring of special processes as specified in all approved documentation. Process nonconformances per MPG 8730.3, "Control of Nonconforming Product." |
| S&MA | 3.5 | Process as a nonconformance (utilizing squawk tag, quality TPS, or withhold tag, as appropriate) any facility system or component which fails to meet the acceptance criteria for a required inspection. |
| TO | 3.6 | Resolve identified nonconformances. Implement and document actions taken to resolve nonconformances. |
| S&MA, TO | 3.7 | Verify, prior to beginning specified test operations, that all facility modification inspections have been successfully completed, that all facility systems have been verified for proper functional operation (i.e., "activated"), and that all resulting documentation is completed. |
| TO | 3.8 | Perform required test operations. Record in documented procedures all test operations performed in order to validate that operations performed meet specified test requirements. |
| TO | 3.9 | Transfer all facility inspection records to the appropriate location as identified in specific local organizational issuances. |

4. RECORDS

The types of records to be maintained are as follows:

4.1 Inspection Requirements. The Testing Organization and S&MA jointly plan and develop the inspection requirements and process controls to assure their proper implementation based on the particular hazards, processes and test requirements applicable to the type of testing performed by each test organization. These

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organization-specific requirements are documented through the MSFC Quality Management System as organizational issuances of the applicable test organization. The records location and retention requirements for these documents (OIs) are specified in the local organizational issuances in compliance with requirements of MPG 1440.2, "MSFC Records Management Program," and NPR 1441.1, "NASA Records Retention Schedules."

4.2 Inspection Evidence. Inspection results and acceptance evidence (i.e. quality stamps) will be documented in test specific work instructions such as test operation procedures and work authorization documents, for each specific inspection as actually performed. These records are to be retained by the testing organization. The records location and retention requirements for inspection evidence records shall be specified in the local organizational issuances in compliance with requirements of MPG 1440.2, "MSFC Records Management Program," and NPR 1441.1, "NASA Records Retention Schedules."

5. FLOW DIAGRAM

None